steamship *Premier* was unable to reach her destined port, Montreal, on account of ice, and returned to Halifax.

On the 22d reports state that Halifax harbor was completely blocked by heavy Gulf ice. Six steamers and 50 sail vessels were detained in port on account of ice. No such blockade has occurred in the past forty-two years.

On the 24th British steamship *Sarmatian*, from Liverpool to Montreal, stopped at Halifax, being unable to get up the Gulf of St. Lawrence on account of ice. Leaving Halifax on the 25th, she encountered heavy field ice 60 miles northwest of Bird Rocks. She met pack ice 12 feet thick, covered with seals.

On the 26th the British schooner *Algeria* had her bows crushed in by the ice and sunk while attempting to make Renews Harbor, south of St. Johns, N. F.

On the 30th the British steamship *Pomeranian*, in N. 48° 10′, W. 62° 30′, sighted two fields of pack ice and a schooner fast in the middle of one of them.

TEMPERATURE OF THE AIR.

[*In degrees Fahrenheit.*]

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are drawn over the high irregular surface of the Rocky Mountain plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

NORMAL TEMPERATURE.

In Table II, for voluntary observers, the mean temperature is given for each station, but in Table I, for the regular stations of the Weather Bureau, both the mean temperatures and the departures from the normal are given for the current month. In the latter table the stations are grouped by geographical districts, for each of which is given the average temperature and departure from the normal; the normal for any district or station may be found by adding the departures to the current average when the latter is below the normal and by subtracting when it is above.

MONTHLY MEAN TEMPERATURE.

For the regular stations of the Weather Bureau the monthly mean temperature is the simple mean of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

During April, 1894, the mean temperature was highest (84) in southeastern California, and next highest (80) in the lower portion of the Valley of the Rio Grande; at Key West, Fla., the monthly mean was 76.6. The lowest temperatures were: At Canadian stations, 30.8 at Charlottetown, P. E. I.; 33.6 at Sydney, C. B. I.; 34.0 at Father Point, Quebec; 35.2 at Port Arthur, Ont.; 37.0 at Battleford, Saskatchewan. At United States stations the lowest temperatures were: 39.0 at Eastport, Me.; 37.8 at Duluth, Minn.; from 29 to 31 in the mountains of central Colorado; 49.6 at Denver, Colo.; and 44.5 at Tatoosh Island, Wash. The temperature averaged 32 at no point within the limits of our daily map, except on the peaks of the Rocky Mountains and in the central portion of the Gulf of Saint Lawrence.

DEPARTURES FROM NORMAL TEMPERATURE.

As compared with the normal for April, temperatures were in excess in the valleys of the Sacramento and San Joaquin, and at Yuma, Ariz., on the Colorado River; they were also in excess at nearly all stations from the Rocky Mountain Divide eastward to the Atlantic, but were deficient on the east coast of Nova Scotia, and were slightly so at a few stations on the immediate coast of Massachusetts, Connecticut, Virginia, North Carolina, South Carolina, and Florida; the principal deficit extended over the Rocky Mountain plateau and the coasts of Washington, Oregon, and California. The maximum excesses were: 5.5 at Escanaba, Mich.; 7.3 at Parry Sound, Ont.; 7.6 at Rockliffe, Ont.; 5.1 at Winnipeg, Man.; 4.6 at Marquette, Mich., and San Antonio, Tex.; 4.7 at Kingston, Ont.; 4.8 at Saugeen, Ont.; and 4.5 at Green Bay, Wis., and Abilene, Tex. The maximum deficits were: 3.6 at Walla Walla, Wash., and Portland, Oreg.

The departures from normal temperature for the current month, and by districts, are as follows:

Positive departures: New England, 0.6; middle Atlantic coast, 0.4; south Atlantic coast, 0.1; Key West, Fla., 0.6; east Gulf States, 1.0; west Gulf States, 1.7; Ohio Valley and Tennessee, 0.5; upper Lake region, 3.1; lower Lake region, 2.4; North Dakota, 2.8; upper Mississippi and Missouri valleys, 2.3; northern slope, 1.6; middle slope, 2.3; southern slope (Abilene), 4.5; southern plateau, 0.5; middle Pacific, 0.1.

Negative departures: Middle plateau, 1.3; northern plateau, 2.8; north Pacific coast, 2.2; south Pacific coast, 1.2.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for April for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for April, 1894; (4) the departure of the current month from the normal; (5) the extreme monthly means for April and the years of their occurrence during the period of observation:

State and station.	(1) Normal for the month of Apr.	(2) Length of record.	(3) Mean for Apr., 1894.	(4) Departure from normal.	(5) Extreme monthly means for April.			
					Highest.	Year.	Lowest.	Year.
	°	Years	°	°	°		°	
Arizona.								
Fort Apache	52.5	22	53.4	+ 0.9	59.5	1879	47.5	1884
Fort Mohave	70.8	23	.....	.....	77.1	1881	62.2	1891
Whipple Barracks	51.1	22	51.0	— 0.1	61.8	1876	45.4	1884
Arkansas.								
Keesees Ferry	61.7	12	60.5	— 1.2	65.3	1888	56.7	1884
California.								
Riverside	60.4	12	.....	.....	63.5	1885	57.8	1891
Colorado.								
Las Animas	51.3	12	53.2	+ 1.9	56.7	1888	46.2	1884
Florida.								
Merritts Island	72.0	12	72.8	+ 0.8	75.4	1883	67.0	1886
Georgia.								
Forsyth	65.3	20	66.5	+ 1.2	69.4	1893	61.0	1875
Idaho.								
Boise Barracks	49.9	20	51.0	+ 1.1	56.5	1888	44.2	1883
Fort Sherman	45.8	10	45.4	— 0.4	50.9	1889	41.8	1882
Indiana.								
Lafayette	50.6	14	52.5	+ 1.9	53.9	1886	45.4	1881
Iowa.								
Cresco	43.1	22	48.7	+ 5.6	48.7	1894	37.5	1874
Kansas.								
Eureka Ranch	54.5	11	56.5	+ 2.0	58.6	1888	49.8	1892
Independence	57.0	22	61.2	+ 3.6	61.7	1878	48.3	1874
Louisiana.								
Grand Coteau	69.7	11	72.0	+ 2.3	72.2	1893	68.0	1891
Maine.								
Orono	40.0	23	41.9	+ 1.9	45.1	1889	33.3	1874
Maryland.								
Cumberland	49.1	23	51.0	+ 1.9	57.6	1881	45.0	1874
Michigan.								
Kalamazoo	47.0	17	49.0	+ 2.0	52.9	1878	42.0	1881
Missouri.								
Sedalia	56.5	11	57.5	+ 1.0	61.5	1888	52.7	1885
Montana.								
Fort Custer	45.9	12	47.8	+ 1.9	50.6	1889	41.3	1893

Departures from normal temperature—Continued.

State and station.	(1) Normal for the month of Apr.	(2) Length of record.	(3) Mean for Apr., 1894.	(4) Departure from normal.	(5) Extreme monthly means for April.			
					Highest.	Year.	Lowest.	Year.
Nebraska.	°	*Years*	°	°	°		°	
Fort Robinson	46.8	10	50.2	+ 3.4	52.8	1888	41.6	1884
Genoa (near)	48.9	18	52.8	+ 3.9	53.0	1890	42.2	1881
Nevada.								
Browns	54.9	23	.....	.....	63.4	1888	46.8	1883
Carson City	48.3	17	48.8	+ 0.5	56.1	1881	43.1	1880
New Hampshire.								
Hanover	41.2	23	45.2	+ 4.0	46.9	1887	33.7	1874
New Mexico.								
Fort Wingate	48.9	23	49.1	+ 0.2	57.3	1881	39.2	1874
New York.								
Cooperstown	40.9	23	43.4	+ 2.5	51.6	1878	33.6	1874
Plattsburg Barracks	41.2	23	44.0	+ 2.8	47.9	1878	33.6	1874
North Carolina.								
Lenoir	55.9	21	56.1	+ 0.2	60.0	1887	42.6	1885
Oklahoma.								
Fort Reno	60.6	10	59.8	— 0.8	61.3	1889	55.8	1884
Fort Sill	61.8	22	64.2	+ 2.4	65.5	1880	53.7	1874
Fort Supply	56.9	15	61.1	+ 4.2	61.6	1888	50.0	1874
Oregon.								
Bandon	49.1	10	49.0	— 0.1	52.5	1889	45.3	1886
Pennsylvania.								
Dyberry	42.2	22	43.8	+ 1.6	49.7	1878	35.0	1874
Grampian	43.4	23	46.0	+ 2.6	52.2	1878	29.0	1875
Wellsboro	43.5	15	41.9	— 1.6	52.2	1886	0.1	1881, 1893
South Carolina.								
Statesburg	62.6	13	63.0	+ 0.4	67.4	1893	60.1	1884
South Dakota.								
Fort Sully	46.6	22	50.4	+ 3.8	55.5	1887	39.2	1875
Texas.								
Austin	70.9	21	.....	.....	75.8	1893	63.1	1874
Silver Falls	62.2	8	.....	.....	66.1	1893	50.4	1886
Utah.								
Terrace	52.5	21	51.8	— 0.7	62.5	1888	45.4	1882
Vermont.								
Strafford	40.6	21	43.6	+ 3.0	48.3	1886	34.9	1874
Virginia.								
Dale Enterprise	53.8	14	50.2	— 3.6	59.1	1886	50.2	1894
Washington.								
Fort Townsend	48.3	20	46.4	— 1.9	52.4	1889	43.5	1893
West Virginia.								
Parkersburg	54.1	13	52.2	— 1.9	64.1	1882	43.0	1885
Wisconsin.								
Madison	44.3	22	47.8	+ 3.4	52.5	1878	37.4	1874
Wyoming.								
Fort Washakie	42.2	11	42.8	+ 0.6	46.6	1889	36.8	1893

YEARS OF HIGHEST MEAN TEMPERATURE FOR APRIL.

The mean temperature for April, 1894, was the highest on record at regular Weather Bureau stations, as shown in the following table, which also gives the highest previous record:

Highest mean temperature for April.

Stations.	Apr., 1894.	Departure from normal.	Highest previous.	
			Temperature.	Year.
Palestine, Tex	70.2	+ 3.7	70.2	1893
Dodge City, Kans	57.6	+ 3.5	56.7	1888
Topeka, Kans	58.5	+ 3.2	56.8	1889
Columbia, Mo	57.3	+ 4.2	56.8	1891
Kansas City, Mo	57.3	+ 2.6	57.0	1890
Des Moines, Iowa	53.0	+ 2.6	52.8	1890
Green Bay, Wis	46.4	+ 4.5	45.7	1889

YEARS OF LOWEST MEAN TEMPERATURE FOR APRIL.

As may easily be anticipated from the preceding section showing that the mean temperature was generally above the average, the record for the month does not show any stations for which the mean temperature was below the normal.

MAXIMUM TEMPERATURE.

The maximum temperatures of the month at regular stations of the Weather Bureau are given in Table I, from which it appears that the highest maxima were: Yuma, Ariz., and San Antonio, Tex., 99; Tucson, Ariz., 91; Fresno, Cal., 92; Red Bluff, Cal., Fort Smith, Ark., and Augusta, Ga., 90.

The lowest maxima were: Woods Holl, Mass., 58; Tatoosh Island, Wash., and Nantucket, Mass., 59; Eastport, Me., and Block Island, R. I., 63; Alpena, Mich., 62; Fort Canby, Wash., 61.

MINIMUM TEMPERATURE.

The lowest temperatures recorded at regular stations of the Weather Bureau are given in Table I, from which the following are selected: The lowest minima were: St. Vincent, Minn., and Escanaba, Mich., 14; Northfield, Vt., and Eastport, Me., 15; Sault Ste. Marie, Mich., 12; Cheyenne, Wyo., 16; Marquette, Mich., 17; Alpena, Mich., 18. The highest minima were: Key West, Fla., 68; Corpus Christi, Tex., Port Eads, La., and Galveston, Tex., 58.

DAILY AND MONTHLY RANGES OF TEMPERATURE.

The greatest daily range of temperature is given for each of the regular Weather Bureau stations in Table I, from which the following are selected:

Greatest daily ranges.—Pueblo, Colo., 48; North Platte, Nebr., 46; Havre, Mont., Yuma and Tucson, Ariz., Northfield, Vt., 45.

Smallest daily ranges.—Key West, Fla., 11; Tatoosh Island, Wash., 12; Corpus Christi, Tex., 14; Port Eads, La., 15.

Monthly ranges.—The extreme monthly ranges may be computed for each Weather Bureau station from the data given in Table I; the following are selected:

Largest monthly ranges.—St. Vincent, Minn., Huron, S. Dak., and Sioux City, Iowa, 63; North Platte, Nebr., 67; Valentine, Nebr., 69; Marquette, Mich., 65.

Smallest monthly ranges.—Key West, Fla., 14; Port Eads, La., 21; Galveston, Tex., and Tatoosh Island, Wash., 22.

DIURNAL PERIODICITY.

The regular diurnal period in temperature is shown by the hourly means given in Table V for all stations having self-registers.

LIMITS OF FREEZING TEMPERATURE.

The southern limit of the region within which the air has had a freezing temperature at some time during the month is shown by full and dotted lines on Chart V, "Total Monthly Snowfall." These lines may be textually described as follows: The line of minimum 32 passes from the coast of Delaware through southern Virginia, eastern Kentucky, southern Indiana, central Illinois, northern Missouri, eastern Kansas, western Oklahoma, northern Texas, central New Mexico, southern Utah, southern Nevada, northern California, central Oregon and Washington. During April, 1894, the line of minimum 40, which corresponds nearly with the limit of hoar frost, passed along the California coast, northern Texas, central Arkansas, central Mississippi, Alabama, Georgia, and South Carolina.

ACCUMULATED TEMPERATURES.

From January 1 to the end of the current month the average temperature for each geographical district was above or below the normal by an amount that is given in the last column of the following table. This average departure from normal temperatures may be used, instead of the simple accumulated temperatures, for comparison with the departure of current crop conditions from the normal condition of vegetation.

Positive.	Departures.		Negative.	Departures.	
	Total.	Average.		Total.	Average.
New England	+ 6.1	+ 1.5	Northern Slope	— 1.5	— 0.4
Middle Atlantic	+ 9.3	+ 2.3	Southern plateau	— 9.4	— 2.4
South Atlantic	+ 7.7	+ 1.9	Middle plateau	— 6.2	— 1.6
Key West	+ 3.0	+ 0.8	Northern Pacific	— 6.2	— 1.6
East Gulf	+ 4.8	+ 1.2	Middle Pacific	— 8.1	— 2.0
West Gulf	+ 3.9	+ 1.0	Southern Pacific	—10.5	— 2.6
Ohio Valley and Tennessee	+ 9.6	+ 2.4			
Lower Lake	+14.5	+ 3.8			
Upper Lake	+17.0	+ 4.2			
North Dakota (Ex. N. W.)	+ 9.8	+ 2.4			
Upper Mississippi	+12.2	+ 3.0			
Missouri Valley	+ 9.2	+ 2.3			
Middle Slope	+ 2.8	+ 0.7			
Southern Slope (Abilene)	+ 3.7	+ 0.9			

PERIODS OF HIGH TEMPERATURE.

The maximum temperatures of the month occurred mostly during the last few days of the month in the central portion of the United States, but during the middle of the month in the Appalachian ranges and the Gulf States. The dates of occurrence may be grouped as follows: On the 1st, at Woods Holl, Mass. 8th, Oklahoma, Okla. 9th, Fort Canby, Wash.; Carson City, Nev.; Jacksonville, Fla. 10th, Eureka, Cal.; Winnemucca, Nev. 15th, Palestine, Tex.; Shreveport, La. 16th, Wichita, Kans.; Fort Smith and Little Rock, Ark.; Meridian and Vicksburg, Miss.; New Orleans, La. 17th, Montgomery, Ala.; Knoxville, Tenn.; Charlotte, N. C. 18th, Tampa, Fla.; Parkersburg, W. Va.; Pittsburg, Pa.; Cleveland, Ohio; Buffalo and Oswego, N. Y. 19th, Portland and Roseburg, Oreg.; Fort Canby, Wash.; Red Bluff, San Francisco, Point Reyes Light, Los Angeles, and San Diego, Cal. 20th, Spokane and Walla Walla, Wash.; Sacramento and Fresno, Cal.; Tucson, Ariz.; Galveston, Tex. 21st, Baker City, Oreg.; Havre, Helena, and Miles City, Mont.; Laramie, Wyo.; Jupiter and Titusville, Fla. 23d, Abilene, Tex.; Rapid City, S. Dak. 24th, San Antonio and Corpus Christi, Tex. 25th, Tatoosh Island, Neah Bay, Port Angeles, Olympia, and Seattle, Wash.; Yuma, Ariz.; Santa Fe, N. Mex.; Salt Lake City, Utah; Idaho Falls, Idaho. 26th, Cheyenne, Wyo.; Denver, Colorado Springs, and Pueblo, Colo.; El Paso, Tex. 27th, Dodge City, Kans.; Key West, Fla.; Cape Henry, Va.; Atlantic City, N. J.; Harrisburg, Pa.; New York and Albany, N. Y.; Boston, Mass.; Eastport, Me.; Sault Ste. Marie, Mich. 28th, Bismarck, N. Dak.; Pierre and Huron, S. Dak.; Valentine, North Platte, and Omaha, Nebr.; Columbia, Kansas City, and Springfield, Mo.: Sioux City, Des Moines, Dubuque, and Davenport, Iowa; Amarillo, Tex.; Indianapolis, Ind.; Cincinnati, Columbus, and Toledo, Ohio; Raleigh, Hatteras, and Kittyhawk, N. C.; Norfolk and Lynchburg, Va.; Washington, D. C.; Baltimore, Md.; Atlantic City, N. J.; Philadelphia, Pa.; New London and New Haven, Conn.; Block Island and Narragansett Pier, R. I.; Woods Holl and Nantucket, Mass.; Portland, Me. 29th, Williston, N. Dak.; St. Vincent, Moorhead, St. Paul, and Minneapolis, Minn.; La Crosse, Wis.; Keokuk, Iowa; Hannibal, Columbia, and St. Louis, Mo.; Springfield and Cairo, Ill.; Memphis, Knoxville, and Chattanooga, Tenn.; Atlanta, Augusta, and Savannah, Ga.; Charleston and Columbia, S. C.; Wilmington and Southport, N. C. 30th, Duluth, Minn.; Green Bay and Milwaukee, Wis.; Chicago, Ill.; Marquette, Grand Haven, Alpena, Port Huron, and Detroit, Mich.; Sandusky, Ohio; Rochester, N, Y. .

It will be seen that, in general, these dates of high temperature group themselves so as to show the southward and eastward movement of the areas of high temperature as they pass over the Rocky Mountains into the Mississippi Valley, after which their movement is more likely to be northeastward.

AREAS OF 20° RISE IN TWENTY-FOUR HOURS.

The daily weather charts show by heavy dotted lines the regions over which the temperature has risen 20° in the preceding twenty-four hours. The following is a list of these areas:

(A) 1st, a. m., 100 by 200, eastern Tennessee.

(B) 1st, a. m., 600 by 300, Maine and New Brunswick.

(C) 3d, a. m., 400 by ——, Lake Superior. 3d, p. m , 150 by 150, Lake Erie. 4th, a. m., 100 by 150, Ohio, and 150 by 250, Ontario.

(D) 7th, a. m., 150 by 200, Saskatchewan.

(E) 14th, p. m., 600 by 300, Colorado, New Mexico, western Kansas, and Texas.

PERIODS OF LOW TEMPERATURE.

The lowest temperatures of the month occurred during the first few days in the Lake region and New England, but during the middle of the month at southern stations, and during the last part of the month in California, and generally show a tendency on the part of areas of abnormal low temperature to move southward and eastward. The dates of occurrence may be arranged as follows:

1st, St. Vincent, Moorhead, Duluth, St. Paul, and Minneapolis, Minn.; Davenport, Des Moines, and Sioux City, Iowa; Amarillo, Tex.; Pierre, S. Dak.; and Key West, Fla. 2d, La Crosse, Wis.; Marquette, Escanaba, and Sault Ste. Marie, Mich.; Green Bay, Wis.; Alpena, Mich.; Dubuque, Iowa; Milwaukee, Wis.; Grand Haven, Mich.; Keokuk, Iowa; Port Huron and Detroit, Mich.; Toledo, Ohio; Indianapolis, Ind.; Cincinnati, Ohio; Oswego, N. Y. 3d, Montgomery, Ala.; Lexington, Ky.; Chattanooga, Tenn.; Raleigh, N. C.; Lynchburg, Va.; Parkersburg, W. Va.; Washington, D. C.; Baltimore, Md.; Harrisburg and Philadelphia, Pa.; Atlantic City and New Brunswick, N. J.; New York, N. Y.; Sandusky and Cleveland, Ohio; Erie, Pa.; Buffalo, Rochester, and Albany, N. Y.; Northfield, Vt.; New Haven and New London, Conn.; Block Island and Narragansett Pier, R. I.; Woods Holl, Nantucket, and Boston, Mass.; Portland and Eastport, Me. 4th, Denver and Pueblo, Colo.; Dodge City, Kans. 5th, Valentine, Nebr.; Wichita and Topeka, Kans.; Omaha, Nebr.; Lander and Cheyenne, Wyo. 6th, Hannibal, Mo.; New Orleans, La.; Mobile, Ala.; Louisville, Ky. 7th, Tampa, Fla.; Meridian, Miss. 9th, Idaho Falls, Idaho; Rapid City, S. Dak.; Colorado Springs, Colo.; Bismarck, N. Dak.; North Platte, Nebr.; Chicago, Ill.; Columbus, Ohio; Pittsburg, Pa.; Santa Fe, N. Mex.

10th, San Antonio, Palestine, Corpus Christi, and Galveston, Tex.; Shreveport, La.; Vicksburg, Miss.; Little Rock, Ark.; Cairo, Ill.; Fort Smith, Ark.; Oklahoma, Okla.; Columbia, Mo.; Huron, S. Dak.; Minneapolis, Minn. 11th, St. Louis, Kansas City, and Columbia, Mo.; Port Eads, La.; Pensacola, Fla.; Norfolk, Va. 12th, Havre, Mont.; Williston, N. Dak.; Springfield, Ill.; Memphis and Nashville, Tenn.; Atlanta, Ga.; Columbia, S. C.; Jupiter, Fla.; Charlotte, Hatteras, and Kittyhawk, N. C. 13th, Knoxville, Tenn.; Augusta, Ga.; Titusville and Jacksonville, Fla.; Savannah, Ga.; Charleston, S. C.; Southport and Wilmington, N. C.; Cape Henry, Va. 15th, Fort Canby, Wash.; Astoria, Oreg. 16th, Olympia and Portland, Oreg.; Walla Walla and Spokane, Wash.; Salt Lake City, Utah. 17th, Helena, Mont.; Baker City and Roseburg, Oreg.; Eureka, Cal.; Carson City, Nev. 18th, Yuma and Tucson, Ariz.; El Paso, Tex. 22d, Tatoosh Island, Neah Bay, East Clallam, and Port Angeles, Wash. 27th, Red Bluff, Sacramento, and San Francisco, Cal. 28th, Fresno and Los Angeles, Cal. 29th, San Diego, Cal.

A consideration of the dates and locations of these minimum temperatures of the month must lead to the conclusion that they represent the combined effect of both nocturnal radiation and the advance eastward or southward of areas of high pressure and low temperature. The forward advance of cold air is the prime factor and the formation of clouds with rain, which takes place in front of high areas, is the secondary factor that introduces irregular modifications of what would otherwise be definite fronts of cold waves. It is in this way that the low temperatures of the 2d came to be irregularly distributed south of the Ohio Valley while they advanced eastward bodily over New England in connection with high area No. II; again, it was in this way that the low temperature of the 27th to the 30th spread over California with but little interruption, whereas, the northward extension into Washington and Oregon produced too much rain and cloud to bring about the minimum temperatures of the month.

AREAS OF 20° FALL IN TWENTY-FOUR HOURS.

A fall of temperature of 20°, or more, in twenty-four hours is

not called a cold wave by the Weather Bureau unless the temperature falls below 40°, and is, therefore, likely to cause a frost injurious to vegetation, but all falls of 20° are indicated on the Daily Weather Map by inclosing the areas within which they occur by heavy dotted lines, and the following list enumerates these regions for the month of April. An approximate idea of the size of the area covered is given by stating in miles the lengths of the two principal dimensions when these can be given; one of these is necessarily omitted when the area extends beyond the region covered by the Weather Map. The falls of 20° in twenty-four hours may be divided into two classes: (1) those due to the local radiation consequent upon the clearing away of cloudy skies; (2) those due to the advent of cold winds attending the progress of an area of high pressure; such winds are more severe on the south and east sides of areas of high pressure, but the temperatures are often a little lower in other portions of the area. The injuries to delicate plants and the unpleasant harshness to human beings are often due to the dryness as much as to the coldness, in which respects the effects of the dry, cold, northeast winds that penetrate the mild climate of California resemble the dry, hot, westerly winds of the summer season in Kansas and Texas.

(A) 1st, p. m., 100 by 200 in New York.

(B) 2d, a. m., 1,000 by 300 in Ontario, Quebec, Vermont, Maine, New Brunswick. 2d, p. m., 200 by 100 in New York, New Jersey, and Connecticut.

(C) 3d, a. m., 500 by 300 in Idaho, Wyoming, and Utah.

(D) 5th, p. m., 200 by 100 in West Virginia and Pennsylvania.

(E) 7th, p. m., 300 by 200 in Alberta, Montana, Idaho. 8th, a. m., 200 by 200 in Alberta, Saskatchewan. 8th, p. m., 700 by 400 in South Dakota, Nebraska, Colorado, Oklahoma. 9th, a. m., 600 by 300 in Nebraska, Kansas, Colorado. 9th, p. m., 200 by 100 in Missouri and Arkansas.

(F) 11th, p. m., 1,200 by 300 in Alberta, Montana, Idaho, Utah, Nevada. 12th, p. m., 500 by 300 in Nebraska, Kansas, Colorado. 13th, p. m., 300 by 200 in northern Texas.

(G) 17th, p. m., 600 by 300 in Nebraska, Colorado, and New Mexico.

(H) 19th, p. m., 300 by 300 in Wisconsin, Minnesota, Iowa, and Nebraska.

(I) 26th, p. m., 600 by 300 in Washington, Oregon, Montana, and Idaho.

(J) 29th, 8 a. m., 200 by 100 in Vermont, New Hampshire, and Maine.

TEMPERATURE AS AFFECTING AGRICULTURE.

The following records of agricultural conditions are taken from newspaper summaries and the official reports of the State Weather Services:

Arkansas.—The weather was rather too cool for the rapid germination of seeds and growth of vegetation, and too wet generally for plowing and planting to progress as rapidly as was desired. However, at the close of the month about all early corn and a majority of the cotton were planted and both were coming up to a good stand. Wheat, oats, gardens, and pastures were all doing well, and stock was in good condition on the range.

Iowa.—The month will rank as one of the most favorable Aprils for farming operations and crop growth ever known in this region. The daily mean temperature was about 3° below the normal.

Indiana.—The conditions of the weather during the month were exceedingly favorable and beneficial to all vegetation, but especially to the growing crops, which, apparently, had been injured by the very sudden cold weather in the latter part of March; the very favorable weather during April revived and advanced everything and put it in good growing condition; plowing and planting of corn had advanced much at the end of the month, more so than for many years; in fact by appearances at the end of April all crops, except some fruits, were in a most promising condition.

Kentucky.—The highly unfavorable weather conditions during the early part of the month prevented rapid farm work. Corn planting was in progress only to a very limited extent by the 10th of the month. Wheat, except the more advanced fields, suffered little from the cool weather, but oats and clover were seriously injured. Most of the fruit trees and gardens were very badly damaged. At the close of the month the crop conditions may be summed up as follows: About two-thirds of the corn crop had been planted under very favorable conditions. The wheat crop was in a highly promising condition; indeed, the outlook for this crop has not for several years been more promising at this season of the year. Rye and grasses were in good condition, but clover was reported very poor. The oat crop, excepting that part planted after the March freeze, was in poor condition, and many fields had been plowed up for corn. Tobacco plants suffered greatly from the March freeze, and many beds had to be resown.

Michigan.—Temperature and rainfall were both favorable during the month, and the growing wheat made fairly good progress.

Missouri.—Throughout nearly the entire month the weather was very favorable for farm work, but from the 1st to the 23d was too cool and, in some sections, too dry for vegetation to make any material advancement, and grass and small grains were slow in recovering from the effects of the severe freezing weather of the last decade of March. Frosts were of frequent occurrence up to the 23d, but did no serious damage.

New England.—The month was generally favorable for farm work and the growth of vegetation, and the end of the month found the season nearly two weeks ahead of the average; grass was in splendid shape, except in a few localities where lack of rain was felt; plowing had begun in the north, and in a few instances grain had been sown and gardens and early vegetables planted, and in the south plums and cherries were rapidly coming into blossom; early vegetables were coming up; asparagus and rhubarb were ready for market.

Nevada.—All farming operations were put back by the cold weather; plowing and seeding were from two to three weeks later than usual. Grass was good after the middle of the month, and there promises to be a large hay crop. Stock have done very well, although losses from scarcity of feed were reported from the northwestern portion of Nye County. The outlook for fruit is not at all encouraging, the freezing weather during the last of the month killing a great deal in nearly all sections of the State. Near Dayton the cold was so intense as to kill even the hardier small fruits, such as currants, etc. The agricultural valleys in the southern part of the State have so far remained untouched, and from all appearances the fruit crop will be about the same as last year, with a probability of a slight increase over the total yield.

Ohio.—For the week ending April 28, in the northern section, farm work has progressed rapidly; potatoes planted, in good condition; corn will be planted next week; wheat, oats, and grass doing well; fruit is blossoming and improving; meadows looking fine. Middle section: all crops make fair progress, slightly retarded by coolness and dryness, early potatoes are already up; apples, pears, cherries, and strawberries in bloom. Southern section: wheat, oats, grass, and pasture are looking finely; early potatoes growing rapidly; conditions of air and soil very favorable for planting corn; rye is beginning to head; strawberries in full bloom; peach bloom is very light.

South Carolina.—The month has been a fairly good one for agricultural purposes, although not remarkably so.

Tennessee.—The general meteorological conditions for the month were but little at variance with the normal. Crops were in very bad condition at the beginning of the month, many of them having been entirely killed and all more or less injured by the cold weather in March; farm work was also several weeks late, but the favorable conditions which prevailed during the greater portion of April have brought out vegetation and allowed farm work to advance rapidly, so that at the close of the month the outlook is favorable for a fairly good yield of everything, except peaches, pears, and apples.

Wisconsin.—The high temperature and liberal showers have proven very beneficial to farmers. A large amount of spring work was done during the month, and grain which was sown is coming up in excellent shape. The weather was not severe enough at any time during the month to cause material injury to grain, and a very prosperous season seems assured.

PRECIPITATION.

[*In inches and hundredths.*]

The distribution of precipitation over the United States and Canada for the month of April, 1894, as determined by reports from about 2,000 stations, is exhibited on Chart III. In Tables I, II, and III, the total precipitation is given for each station; the departures from the normal are given for regular stations of the Weather Bureau in Table I. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the